DISCUSSION OF THE CLAIMS

Claims 1-20 are active in the present application. Previously presented Claims 1-17 are amended for matters of form and for clarity. Claims 18-20 are new claims. Support for new Claim 18 is found in the original claims. Support for Claim 19 is found in the original claims. Support for Claim 20 is found, for example, on page 1 of the specification.

No new matter is added.

REMARKS/ARGUMENTS

Applicants' claimed invention is a process for the catalytic hydrodealkylation of a hydrocarbon composition. Applicants have shown in the original specification that contacting the hydrocarbon composition with a particular catalyst under the conditions recited in the present claims, e.g., in the presence of water, permits the formation of a hydrodealkylation product that is especially pure with respect to the undesired formation of transalkylation products, isomerization products, disproportionation products and condensation products (see paragraph [0003] of the PG publication corresponding with the present application (i.e., U.S. 2007/0203378)).

Contacting the hydrocarbon composition with the catalyst in the presence of water is an important feature of the claimed invention. Applicants disclose the following in paragraph [0011] of the PG publication:

> The Applicant has now unexpectedly found that it is possible to induce the catalytic hydrodealkylation reaction alone, in the presence of water, of C_8-C_{13} alkyl aromatic hydrocarbons to benzene, toluene, and ethane (BTE), without contemporaneous isomerization, transalkylation, disproportioning and condensation reactions, by selecting suitable operative conditions and catalyst formulation.

Thus, in one embodiment of the invention the hydrodealkylation is carried out alone, e.g., without undesirably subjecting components of the C_8-C_{13} hydrocarbon composition to isomerizing, transalkylating, disproportionating or condensing.

Applicants demonstrate the effect of water on the catalytic hydrodealkylation in the examples of the specification. Table 1 describes two charge types, e.g., feed streams containing one or more C_8-C_{13} alkylaromatic compounds. "Charge 1" is similar to "Charge 2" except that Charge 1 does not include water, i.e., Charge 1 does not include the ethanol water carrier.

Table 2 provides a comparison of processes carried out with and without water. Examples 1, 3, 5 and 7 are carried out on Charge 1 and thus describe a hydrodealkylation carried out in the *absence* of water. In contrast, Examples 2, 4, 6 and 8 describe the hydrodealkylation of Charge 2, i.e., in the *presence* of water. It is readily evident from Table 2 that the water-free and water-containing processes provide substantially different product mixtures. For example, the inventive process of Example 2 has a total amount of benzene and toluene production (i.e. ΣBT) of 55.4% in comparison to 52.4% for the comparative Example 1. Such differences in process performance is demonstrated across the spectrum of reaction conditions described in Table 2. Applicants summarize this effect in paragraph [0044] of the PG publication (underlining added):

> Under the same operating conditions, it can be observed (see Table 2, Examples 1-8) how, both at 510 and 550°C, the selectivity of the hydrodealkylation reaction to Benzene plus Toluene (BT liquid-phase) or to Benzene plus Toluene plus Ethane (BTE, liquid-phase and gas phase) is <u>always the highest when the ZSM-5/MO catylitic system is operating in the presence of H_2O (Examples 4 and 8)</u>.

Applicants further disclose the following in paragraph [0048]:

> All these results indicate the unexpected existence of an extremely strong synergy between the catalyst and H_2O to the extent that the overall ZSM-5/Mo/H_2O system should be considered as being the real reaction catalyst. The results relating to the conversion and selectivity and consequently also to the activity, indicate a surprising stability of the catalytic system with respect to degradation effects due to the presence of water also at high temperatures, unlike what is described in the known art.

The Office asserts that the claimed invention is obvious in view of <u>Drake</u> (U.S. 6,063,975) but admits that <u>Drake</u> does not disclose "the presence of water in the hydrodealkylation process" (see lines 10-12 of page 4 of the July 6, 2009 Office Action). The Office asserts that it would be obvious to carry out the <u>Drake</u> process in the presence of

water because Drake discloses that a diluent may be present. The Office cites to column 9 of Drake as support that the Drake process may be carried out with a diluent.

As a first point, diluents are recognized by those of skill in the art as components that do not exert any effect upon a process other than concentration effects. Diluents are, for all practical purposes, inert materials that have no substantive effect on a hydrodealkylation process.

Applicants submit that those of ordinary skill in the art would not have foreseen that a substantially improved hydrodealkylation process can be obtained by carrying out the hydrodealkylation under the conditions recited in the present claims (e.g., in the presence of water)because Drake's disclosure that water may be present as a diluent teaches that water would not be inert and not active in the hydrodealkylation and as a consequence would have no material effect on the hydrodealkylation or the products formed therefrom.

Secondly, Applicants submit that the rejection should be withdrawn in view of Applicants' data showing that substantially improved process performance is obtained when water is present. Applicants' data rebut the Office's assertion of obviousness. In particular, Drake groups diluents such as nitrogen and water together thereby suggesting that such diluents are equivalent.

For example, Drake describes hydrogen and water as diluents. Applicants have shown in the original specification that carrying out the process only in the presence of hydrogen (e.g., comparative examples 1, 3, 5 and 7) provides lower overall yields of the desired products (ΣBT). In contrast, improved yields of desirable products are obtained and side reactions such as transalkylation are minimized or eliminated when water is present during hydrodealkylation .

If in fact the Office's assertion that the diluents of Drake are equivalent were correct, one would have expected equivalent hydrodealkylation performance. As noted above,

Applicants' data directly rebut such an assertion. Applicants thus submit that the presently claimed invention is not obvious over Drake and respectfully request withdrawal of the rejection.

Obviousness-Type Double Patenting

The Office rejected the claims for obviousness-type double patenting in view of co-pending applications 12/375,830 and 11/586,586 (see pages 5 and 6 of the July 6, 2009 Office Action).

The Office relied on Drake in support of both obviousness-type double patenting rejections. The Office admits that the claims of the co-pending applications do not describe carrying out a process in the presence of water and relies on Drake as evidence that such conditions are conventional and/or obvious.

As noted above in detail, Applicants' data rebut the Office's assertion that it would be obvious to carry out hydrodealkylation in the presence of water. Applicants thus submit that the obviousness-type double patenting rejections should not stand and all claims should now be allowed.

For the reasons set forth above, Applicants respectfully request withdrawal of the rejections and the allowance of all now-pending claims.

Respectfully submitted,

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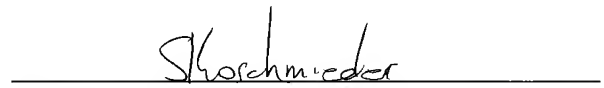

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